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Cholesterol granuloma of the maxillary sinus: a forgotten entity

Ziarniniak cholesterolowy zatoki szczękowej: zapomniana jednostka chorobowa

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Abstract

Aim of the study: Cholesterol granuloma is a histological entity which consists of granulation tissue in which a large quantity of cholesterol crystals provoke foreign body giant cell formation. Cholesterol granulomas are often found in the middle ear with rare presentation in the paranasal sinus. We would like to highlight the diagnostic challenges and the management of maxillary sinus cholesterol granuloma in a young woman presenting as a unilateral nasal mass. **Case study:** We report a young woman with cholesterol granuloma of maxillary sinus who initially presented with unilateral nasal obstruction. Rigid nasoscopy and imaging were suggestive of an antrochoanal polyp. Ipsilateral functional endoscopic sinus surgery was done successfully. **Conclusion:** Albeit rare, cholesterol granuloma ought to be considered a differential diagnosis in a sinonasal tumour. This case report highlights the rare presentation of maxillary sinus cholesterol granuloma which ought to be considered a differential diagnosis of a unilateral nasal mass.

Keywords: cholesterol granuloma, paranasal sinus, functional endoscopic sinus surgery

Streszczenie

Cel badania: Ziarniniak cholesterolowy to jednostka histologiczna składająca się z ziarniny, w której duża ilość kryształów cholesterolu powoduje tworzenie się zmiany typu ciała obcego z komórek olbrzymich. Ziarniniaki cholesterolowe często występują w uchu środkowym, natomiast rzadko w zatokach przynosowych. W pracy zwrócono uwagę na wyzwania diagnostyczne i sposób postępowania u młodej pacjentki z jednostronnym guzem jamy nosowej, u której rozpoznano ziarniniaka cholesterolowego zatoki szczękowej. **Opis przypadku:** Autorzy przedstawiają przypadek młodej kobiety z rozpoznaniem ziarniniaka cholesterolowego zatoki szczękowej objawiającego się jednostronną blokadą jamy nosowej. Wyniki badania endoskopowego jamy nosowej z użyciem endoskopu sztywnego oraz wyniki badania obrazowego sugerowały obecność polipa choanalnego. Przeprowadzono udaną funkcjonalną endoskopową operację zatoki z dostępu przez ipsilateralny przewód nosowy. **Wniosek:** Pomimo rzadkiego występowania ziarniniaka cholesterolowego jednostkę tę warto uwzględnić w diagnostyce różnicowej guzów zlokalizowanych w zatokach i jamie nosowej. W przedstawionym opisie przypadku zwrócono uwagę na rzadką prezentację ziarniniaka cholesterolowego zatoki szczękowej, którego należy uwzględnić w diagnostyce różnicowej jednostronnego guza jamy nosowej.

Słowa kluczowe: ziarniniak cholesterolowy, zatoka przynosowa, funkcjonalna endoskopowa operacja zatoki

INTRODUCTION

Cholesterol granuloma (CG) is a histological entity consisting of granulation tissue in which a large quantity of cholesterol crystals provoke foreign body giant cell formation. The pathogenesis of cholesterol granuloma is unknown. The clinical features of CG in the maxillary sinus are nonspecific, mimicking other cystic or inflammatory diseases⁽¹⁾. Pain and nasal obstruction or congestion are amongst the common symptoms reported⁽¹⁾. Surgery is the most appropriate treatment of CG in the maxillary sinus, commonly by means of a classic Caldwell–Luc operation. However, with the advent of endoscope, recent years have witnessed great outcome with endoscopic sinus surgery⁽¹⁾.

CASE REPORT

A 22-year-old female with a history of childhood asthma presented with right-sided nasal blockage for the past 3 years. Apart from that, there was no epistaxis, rhinorrhoea or any other ocular or throat symptoms. Rigid nasoendoscopy revealed a polypoidal mass occupying the right nasal cavity and arising from the osteomeatal complex extending posteriorly to the choanae. The left nasal cavity was clear with no polyp or secretion seen. Computer tomography of the paranasal sinus revealed a soft-tissue mass occupying the right maxillary sinus (Fig. 1) and the right inferior turbinate, extending posteriorly to the choana, with no evidence of expansion or erosion. Hence, a provisional diagnosis of right antrochoanal polyp was made and the patient was counselled for right functional endoscopic surgery, which she agreed upon.

Intraoperative findings were uneventful. A smooth-surfaced, greasy mass was seen arising from the accessory ostium, within the maxillary cavity; it was attached to the anteromedial wall. The mass was removed in toto via the

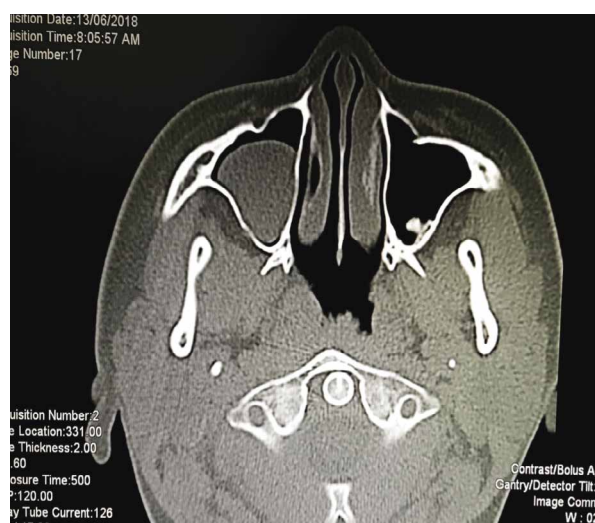


Fig. 1. Computed tomography of the paranasal sinus revealed a soft tissue mass within the maxillary sinus

inferior turbinate antrostomy to facilitate the removal of mass. The removed mass was sent for histopathological examination (HPE). HPE revealed fragments of polypoidal tissue lined by respiratory-type epithelium with multiple foci of cholesterol cleft formation, hemosiderin-laden macrophages, mild lymphocytes with multinucleated giant cells, which were consistent with cholesterol granuloma (Fig. 2). The patient was well postoperatively with no complaints and was discharged home 1 day after the surgery.

DISCUSSION

CG is commonly seen in the middle ear, with rare occurrence within the paranasal sinus⁽²⁾. CG has been reported in patients in the age group of 22 to 67 years (mean of 44.9 years), when it involves the maxillary sinus⁽¹⁾. Male gender predilection, with a male to female ratio of 3:1, has been identified⁽³⁾, as compared to our patient who is female.

The pathogenesis of maxillary sinus cholesterol granuloma still remains uncertain and its occurrence has been linked to countless causes, including bleeding, inadequate lymphatic drainage, poor ventilation, trauma, surgery, sinusitis, and odontogenic causes⁽¹⁾. Despite the myriad causes, the most plausible reason occurs following impaired drainage. This disrupts sinus ventilation, causing bleeding into the sinus. Cell membrane of erythrocytes destroyed during bleeding precipitates in a crystalline form, which stimulates foreign body reaction, causing migration of leukocytes and macrophages, thereby giving rise to foreign body giant cells⁽³⁾.

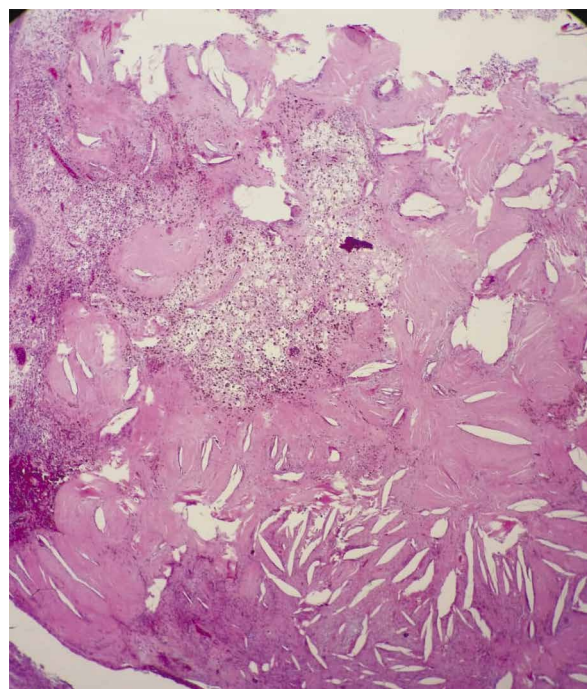


Fig. 2. Foci of cholesterol cleft, hemosiderin-laden macrophages, mild lymphocytes with multinucleated giant cells consistent with cholesterol granuloma

CG of the maxillary sinus commonly presents as a unilateral, painless, slow-growing mass and is often misdiagnosed as an antrochoanal polyp as in our case. Patients usually have a preceding history of nasal blockage, rhinorrhoea, facial pain and headache⁽⁴⁾. Preoperative diagnosis of maxillary sinus CG is difficult. Nevertheless, the presence of clear golden yellow rhinorrhoea might be more suggestive.

Radiographic findings of maxillary sinus CG are usually non-specific as there are no pathognomonic characteristics. These include the presence of opacification or well-defined soft tissue density, although bone expansion and erosion can be rarely observed. However, magnetic resonance imaging shows hyperdensity in both T1WI and T2WI, which are characteristic findings of CG. The intense signalling in T1WI is caused by the paramagnetic effect of methemoglobin, while the hyperintensity in the T2WI is caused by granulation tissue in the paranasal sinus.

Maxillary sinus CG is diagnosed by HPE. Microscopical presence of cholesterol clefts surrounded by multinucleated foreign body giant cells with the presence of neovascularisation and hemosiderin within the fibrous connective stromal tissue is suggestive⁽⁵⁾.

Surgery remains the most acceptable mode of treatment. Surgical approach depends on the size and extent of destruction. Smaller granulomas without extension may be treated with drainage of the cyst contents. Our patient successfully underwent functional endoscopic sinus surgery with no postoperative complications. As for recurrence and malignant transformation, it has not been reported till date.

CONCLUSION

Maxillary sinus CG is a rare tissue reaction to cholesterol crystals in the maxillary sinus and ought to be considered a differential diagnosis of a unilateral nasal mass. Hence, HPE of all unilateral nasal masses is warranted for accurate diagnosis to be made.

Conflict of interest

The authors do not declare any financial or personal links with other persons or organisations that might adversely affect the content of the publication or claim any right to the publication.

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